

## Naphthalene

### *Chemical Information*

**CAS Number** - 91-20-3

**Alternate Names** - naphthalin, tar camphor, white tar

**General Uses** - This chemical is used to make products like mothballs that repel and keep moths away. It is also used to make dyes, leather goods, and insecticide.

**Potential Hazards** - This chemical is flammable/combustible. In addition, exposure to large doses of Naphthalene may damage or destroy red blood cells.

### *Summary Analysis– Naphthalene*

- In 2003, the 10,399,334 pounds of naphthalene made it the third largest quantity of all the PCs, comprising about 13 percent of the total quantity. In 2003, there was a 25 percent decrease in the total quantity of naphthalene, compared to the quantity reported in 1999.
- In 2003, naphthalene was managed primarily by treatment (52.5%), followed by energy recovery (41.7%), and disposal (5.8%). Recycling of naphthalene decreased in 1999-2001 but then dramatically increased in 2002 and 2003, with almost 18.5 million pounds recycled in 2003.
- Of the 450 facilities that reported naphthalene in 2003, 27 facilities accounted for almost 63 percent of the total quantity of this chemical.
- In 2003, over 90 percent of the naphthalene was reported by facilities in Regions 3, 4, 5, and 6.
- Facilities in 8 states accounted for over 80 percent of the total PC quantity of naphthalene in 2003. Two of the states, Texas and Indiana, accounted for 51 percent of the total quantity.
- Facilities in 8 industry sectors (SIC codes) reported over 80 percent of this chemical in 2003; about 55 percent of the naphthalene was reported by facilities SIC 3479 (Metal coating and allied services), SIC 2869 (Industrial organic chemicals, nec ), and SIC 2911 (Petroleum Refining).

**National Trends – Naphthalene.** Exhibit 4.158 presents the total PC quantity (lbs.) of naphthalene reported in 1999 to 2003, showing the disposal, treatment, energy recovery, as well as recycling quantities. In 2003, naphthalene was the third largest quantity of all the PCs with 10,399,334 pounds, representing 13.1 percent of the total quantity. In 2003, there was a 25 percent decrease in the total quantity of naphthalene, compared to the quantity reported in 1999. There also was a slight increase (14.2%) in the number of facilities reporting this chemical, from 394 facilities in 1999 to 450 facilities in 2003.

Since 1999, the relative use of disposal, treatment, and energy recovery to manage naphthalene has remained relatively consistent. In 2003, the naphthalene was managed primarily by treatment (52.5%), energy recovery (41.7%), and disposal (5.8%). Recycling of naphthalene decreased in 1999-2001 but then dramatically increased in 2002 and 2003, with almost 18.5 million pounds recycled in 2003.

Exhibit 4. 158. National-Level Information for Naphthalene (1999-2003)

	1999	2000	2001	2002	2003	Percent Change (1999-2003)	Management Method -- Percent of Quantity of this Chemical in 2003
Number of Facilities	394	417	416	423	450	14.2%	
Disposal Quantity (lbs.)	780,214	619,281	481,138	424,071	603,061	-22.7%	5.8%
Energy Recovery Quantity (lbs.)	5,980,831	5,074,338	5,801,984	5,361,161	4,341,343	-27.4%	41.7%
Treatment Quantity (lbs.)	7,109,098	8,813,389	4,057,233	5,419,234	5,454,930	-23.3%	52.5%
Priority Chemical Quantity (lbs.)	13,870,144	14,507,008	10,340,355	11,204,466	10,399,334	-25.0%	
Recycling Quantity (lbs.)	13,437,824	12,231,088	6,310,310	25,677,936	18,495,107	37.6%	

Exhibit 4.159 shows the number of facilities that reported naphthalene within various quantity ranges. Of the 450 facilities that reported naphthalene in 2003, 27 facilities accounted for almost 63 percent of the total quantity of this chemical. About one-fourth of the facilities (125) reported almost 95 percent of the total PC quantity of naphthalene in 2003.

Exhibit 4. 159. Distribution of Facilities that Reported Quantities for Naphthalene (2003)

Naphthalene ( 10,399,334 pounds)		
Quantity Reported	Number of Facilities Reporting this quantity (2003)	Percent of Total Quantity for this Priority Chemical
up to 10 pounds	42	less than 0.1%
between 11 - 100 pounds	52	less than 0.1%
between 101 -1,000 pounds	104	0.4%
between 1,001 - 10,000 pounds	127	4.8%
between 10,001 - 100,000 pounds	98	32.2%
between 100,001 - 1 million pounds	27	62.5%
> 1 million pounds	0	0.0%

*EPA Region Trends- Naphthalene.* Exhibit 4.160 shows the quantity (pounds) of naphthalene reported by facilities in each EPA Region in 1999 to 2003. In 2003, over 90 percent of the naphthalene was reported by facilities in Regions 3, 4, 5, and 6. Overall, facilities in 6 Regions reported a decreased quantity in 2003, compared to 1999. However, facilities in Region 3 reported more than twice the quantity reported in 1999. Exhibit 4.161 shows the regional distribution of naphthalene quantities and their respective facilities in 2003.

Exhibit 4. 160. Quantity of Naphthalene Reported by EPA Regions (1999-2003)

EPA REGION	1999	2000	2001	2002	2003	Percent Change in Quantity (1999-2003)	Percent Of the Total Priority Chemical quantity (2003)
6	7,670,899	9,107,898	4,259,858	4,814,930	4,448,958	-42.0%	42.8%
5	2,958,777	2,363,200	1,817,386	3,101,114	2,657,672	-10.2%	25.6%
3	613,420	727,688	2,224,159	1,184,495	1,328,025	116.5%	12.8%
4	1,758,881	1,322,322	1,173,147	1,125,888	985,178	-44.0%	9.5%
2	270,629	378,957	422,639	467,921	438,339	62.0%	4.2%
9	251,270	207,186	146,215	201,544	231,491	-7.9%	2.2%
7	199,377	176,702	139,813	155,030	158,280	-20.6%	1.5%
10	35,750	43,317	56,875	81,817	93,034	160.2%	0.9%
1	37,399	98,486	84,422	65,479	50,171	34.2%	0.5%
8	73,742	81,252	15,841	6,249	8,187	-88.9%	0.1%
Total	13,870,144	14,507,008	10,340,355	11,204,466	10,399,334	-25.0%	

Exhibit 4. 161. Distribution of Facilities Reporting Naphthalene in 2003 & Quantity of Naphthalene Reported in 2003 by Region

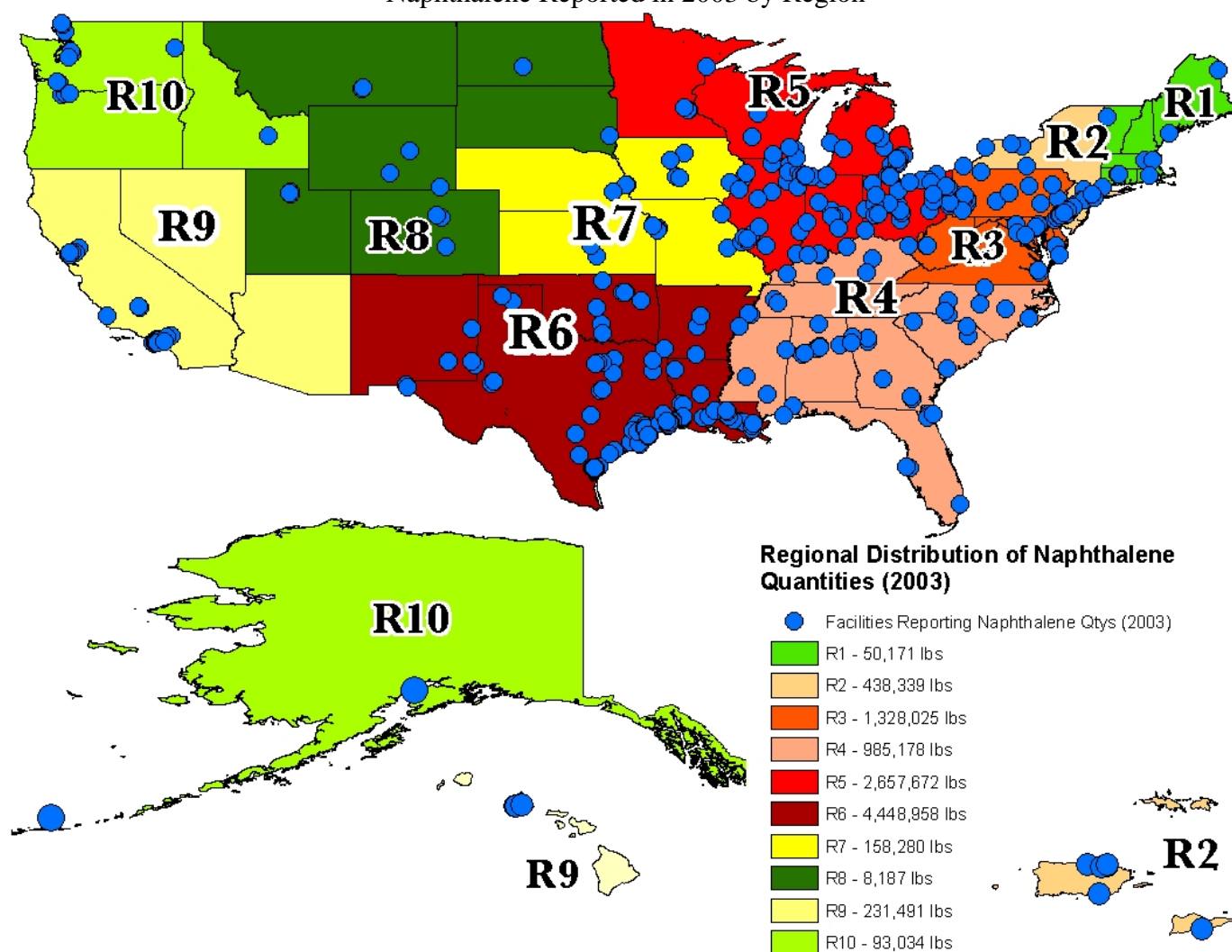


Exhibit 4.162 shows how naphthalene was managed by facilities in 2003. About 53 percent of the naphthalene was treated (primarily onsite). Energy recovery (both onsite and offsite) was used for about 42 percent of the total quantity. Region 6 facilities reported almost 87 percent of the recycling of naphthalene in 2003.

Exhibit 4. 162. Management Methods for Naphthalene, By EPA Region (2003)

EPA Region	Disposal		Energy Recovery		Treatment		Recycling	
	Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
1	0	302	46,369	1,326	0	2,174	0	2,800
2	0	1,372	6,202	258,130	156,355	16,281	64,789	7
3	12	73,684	501,306	116,701	454,022	182,300	152,696	64,722
4	929	25,730	224,429	99,746	616,611	17,732	840,668	7,464
5	3,212	74,766	451,335	436,716	1,675,402	16,241	1,127,842	63,665
6	147,841	231,299	844,382	1,055,421	1,900,404	269,611	4,298,866	11,709,943
7	6	17,686	60,205	10,847	36,873	32,664	10,582	85
8	263	1,528	1,671	1,287	2,535	903	19,233	409
9	11	24,337	139,875	14,994	42,782	9,491	12,000	11,082
10	58	26	68,608	1,794	17,278	5,271	98,489	9,765

*State Trends- Naphthalene.* Exhibit 4.163 shows the quantity of naphthalene that was reported between 1999 and 2003 in 8 states where facilities accounted for over 80 percent of the total PC quantity of naphthalene in 2003. Facilities in Texas and Indiana (Exhibit 4.164), reported 51 percent of the total quantity. Compared to the quantity reported in 1999, only Texas facilities reported a decrease (-50.2 %) in the total quantity of naphthalene in 2003.

Exhibit 4. 163. State-Level Information for Naphthalene (1999-2003)

State	1999	2000	2001	2002	2003	Change in Quantity (1999-2003)	Percent Change in Quantity (1999-2003)	Percent of Total Quantity of this Priority Chemical (2003)
Texas	6,940,912	8,241,033	3,282,625	3,558,203	3,454,587	-3,486,325	-50.2%	33.2%
Indiana	1,260,068	1,219,795	843,029	1,522,028	1,831,607	571,539	45.4%	17.6%
Louisiana	497,091	695,668	629,883	798,651	768,509	271,418	54.6%	7.4%
West Virginia	183,828	184,046	1,529,958	463,919	683,120	499,292	271.6%	6.6%
Pennsylvania	357,263	482,895	514,200	513,066	505,740	148,477	41.6%	4.9%
Illinois	366,159	537,553	528,845	502,868	474,777	108,618	29.7%	4.6%
New Jersey	261,309	372,436	334,688	458,297	428,517	167,208	64.0%	4.1%
Georgia	158,156	187,368	185,462	199,472	234,268	76,112	48.1%	2.3%

Exhibit 4. 164. Trends Analysis on States with Largest Quantity Increase and Decrease (1999 – 2003): Facilities in Indiana and Texas

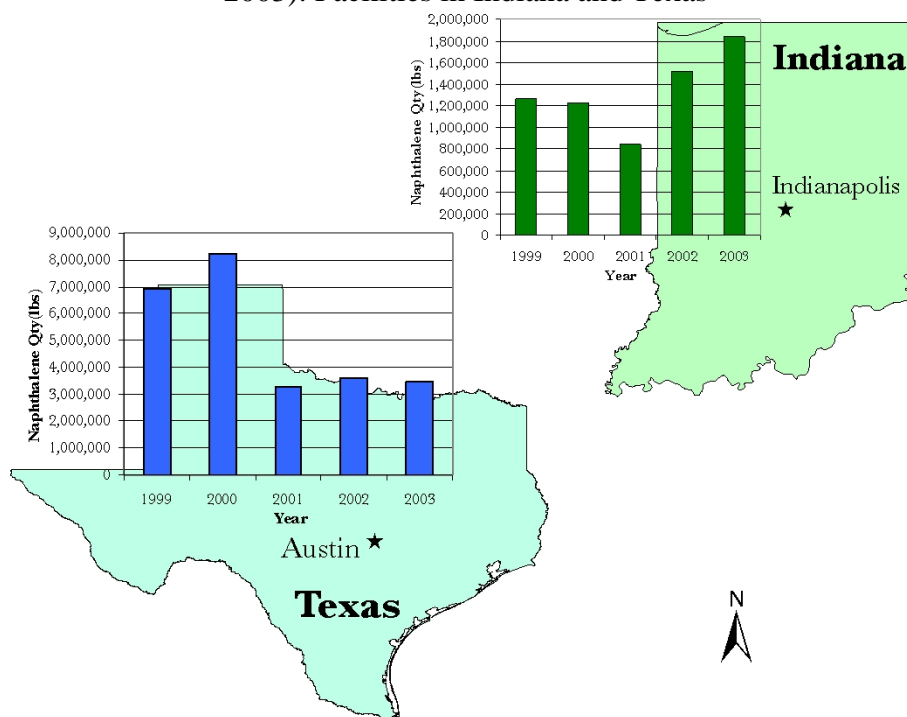
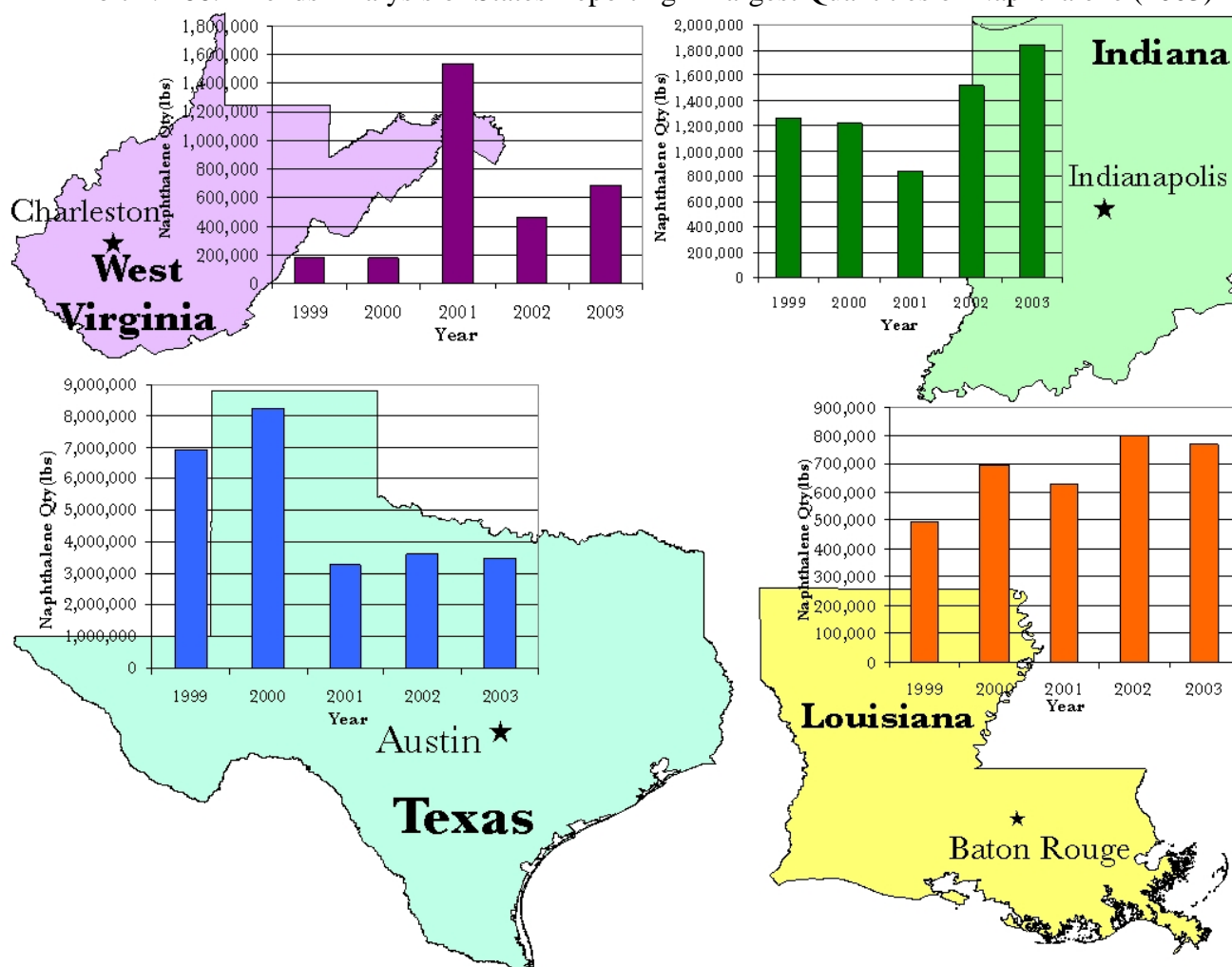


Exhibit 4.165 shows how naphthalene was managed by facilities in these 8 states in 2003. Most of the naphthalene was treated, primarily onsite. Onsite and offsite energy recovery was used for about 39 percent of the naphthalene. Less than 10 percent was land disposed. In 2003, the majority of recycled naphthalene was reported by facilities in Texas, Louisiana, and Illinois.

Exhibit 4. 165. Management of Naphthalene in States with 80 Percent of Total Quantity (2003)

State	Total Priority Chemical Quantity (2003)	Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
Texas	3,454,587	141,321	167,842	674,385	860,057	1,380,618	230,365	1,985,598	11,692,526
Indiana	1,831,607	0	47	268,370	272,615	1,288,770	1,805	92,377	1,734
Louisiana	768,509	1,069	61,712	140,522	12,855	513,699	38,652	2,023,204	17,250
West Virginia	683,120	11	29,988	281,641	5,588	235,512	130,380	0	5,520
Pennsylvania	505,740	1	43,548	195,165	107,710	122,185	37,131	140,473	54,043
Illinois	474,777	600	46,893	69,854	99,930	251,368	6,132	948,905	22,579
New Jersey	428,517	0	569	0	255,970	155,921	16,057	0	5
Georgia	234,268	0	0	1,850	7,821	221,186	3,411	17,680	0

Exhibit 4. 166. Trends Analysis of States Reporting 4 Largest Quantities of Naphthalene (2003)



*Industry Sector (SIC) Trends- Naphthalene.* Exhibit 4.167 shows the PC quantity (pounds) of naphthalene reported in 8 industry sectors where facilities accounted for over 80 percent of this chemical in 2003. Facilities in three of these industry sectors: SIC 3479 (Metal coating and allied services), SIC 2869 (Industrial organic chemicals, nec ), and SIC 2911 (Petroleum Refining) reported more than 55 percent of the total PC quantity of naphthalene reported in 2003. In 2003, the largest increase, compared to the quantity reported in 1999, was reported by facilities in SIC 3479 -- an increase of over 1 million pounds of naphthalene. Five of the 8 industry sectors reported decreased quantities in 2003. Of particular note, facilities in SIC 2911 reported a decrease of over 3 million pounds of naphthalene; a Texas facility accounted for most of this decrease.

Exhibit 4. 167. Industry Sector-Level Information for Naphthalene (1999-2003)

Primary SIC Code	SIC Description	Number of Facilities for this SIC Code	1999	2000	2001	2002	2003	Change in Quantity (1999-2003)	Percent of Total Quantity of this Priority Chemical (2003)
3479	Metal coating and allied services	31	1,461,664	1,769,687	1,582,663	2,304,761	2,542,643	1,080,979	24.5%
2869	Industrial organic chemicals, nec	46	1,409,364	1,362,180	1,126,888	2,003,120	1,882,383	473,019	18.1%
2911	Petroleum refining	100	4,406,285	5,412,899	1,254,886	1,319,246	1,341,211	-3,065,074	12.9%
2865	Cyclic crudes and intermediates	12	1,474,913	786,566	592,369	1,549,766	1,002,559	-472,354	9.6%
2821	Plastics materials and resins	26	810,771	662,107	398,380	635,225	605,237	-205,534	5.8%
2879	Pesticides and agricultural chemicals, nec	13	47,977	92,901	1,382,053	143,629	330,336	282,359	3.2%
4925	Gas production and/or distribution	1	810,448	628,055	270,467	197,741	324,962	-485,486	3.1%
2812	Alkalies and chlorine	2	728,071	667,041	706,949	534,539	296,755	-431,316	2.9%

Exhibit 4.168 shows how naphthalene was managed by facilities in these 8 industry sectors. Most of the naphthalene reported by facilities in SICs 3479 and 2911 was managed by onsite treatment. Facilities in SIC 2869 used a combination of both onsite/offsite energy treatment and treatment for their naphthalene. Facilities in SIC 2865 reported using land disposal for about 26 percent of their quantity of naphthalene; the remaining quantity was managed using energy recovery (over 48%) and treatment (almost 26%). Onsite energy recovery was used for most of the naphthalene reported by facilities in SICs 2879 and 2812.

Exhibit 4. 168. Management of Naphthalene in Industry Sectors (SIC Codes) with 80 Percent of Total Quantity (2003)

SIC Code	SIC Description	Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
3479	Metal coating and allied services	0	0	386,867	73,162	2,075,615	6,998	7,353	32,143
2869	Industrial organic chemicals, nec	2,171	17,641	199,887	732,531	702,176	227,977	921,387	11,666,016
2911	Petroleum refining	5,268	27,177	2,142	17,916	1,255,735	32,973	4,349,161	2,408
2865	Cyclic crudes and intermediates	132,512	130,846	200,894	283,836	107,526	146,946	840,420	0
2821	Plastics materials and resins	1	13,451	267,779	231,206	76,068	16,732	38,375	9,252
2879	Pesticides and agricultural chemicals, nec	16	35	281,641	2,800	9,598	36,246	3,919	0
4925	Gas production and/or distribution	0	47	0	246,910	77,230	775	91,226	0
2812	Alkalies and chlorine	807	0	216,273	0	79,603	72	0	0

*Recycling.* Exhibit 4.169 provides some indication of the extent to which facilities in certain industry sectors recycled at least 100 pounds of naphthalene in 1999-2003, rather than manage it

as a waste. For those year(s), the facility did not report a PC quantity, i.e., a quantity managed via land disposal, energy recovery, or treatment.

Exhibit 4. 169. Facilities reporting Recycling but not a Priority Chemical quantity (1999-2003)

			1999		2000		2001		2002		2003	
Number of Facilities	EPA Region	State	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle
<b>SIC 2491 -- Wood preserving</b>												
1	1	Connecticut	0	0	1,998	0	1,888	0	3,464	0	3,360	0
<b>SIC 2754 -- Commercial printing, gravure</b>												
1	4	Georgia	1,167,339	4,624	1,056,359	10,052	1,037,812	7,996	0	0	0	0
<b>SIC 2851 -- Paints and allied products</b>												
1	5	Indiana	3,564	0	0	0	0	0	0	0	0	0
1	6	Arkansas	0	0	3,320	0	2,033	0	1,137	0	5,719	0
1	9	California	0	1,170	0	1,680	0	510	0	0	0	0
<b>SIC 2865 -- Cyclic crudes and intermediates</b>												
1	4	South Carolina	0	0	0	0	1,000	0	0	0	0	0
1	4	Alabama	0	0	0	0	0	0	1,000	0	1,000	0
<b>SIC 2869 -- Industrial organic chemicals, nec</b>												
1	6	Louisiana	0	6,688	0	0	0	0	0	0	0	0
2	6	Texas	0	500,000	0	6,300,000	0	7,600,000	0	400	0	0
<b>SIC 2899 -- Chemical preparations</b>												
1	6	Louisiana	290	0	0	0	0	0	0	0	0	0
<b>SIC 2911 -- Petroleum Refining</b>												
1	5	Illinois	0	1,043	0	0	0	0	0	0	0	0
1	6	Louisiana	0	0	0	0	0	0	0	1,438	0	1,600
1	6	Texas	0	469	0	715	0	29	0	25	0	0
1	6	New Mexico	6,937	0	3,297	0	0	0	0	0	0	0
1	8	Montana	0	0	0	0	0	0	0	0	1,500	0
1	8	Wyoming	17,793	0	13,778	0	13,221	0	18,507	0	11,944	0
<b>SIC 2992-- Lubricating oils and greases</b>												
1	4	Georgia	0	0	0	530	0	436	0	562	0	0
<b>SIC 3312-- Blast furnaces and steel mills</b>												
1	4	Alabama	0	0	0	0	0	0	52,301	0	99,207	0
1	5	Michigan	0	0	0	0	0	0	0	0	0	2,933
<b>SIC 3321-- Gray and ductile iron foundries</b>												
1	5	Ohio	0	61,737	0	12	0	12	0	9	0	6
<b>SIC 3353-- Aluminum sheet, plate, and foil</b>												
1	4	Tennessee	0	300	0	252	0	0	0	0	0	0
<b>SIC 3411-- Metal cans</b>												
1	5	Indiana	0	0	0	1,705	0	0	0	3,727	0	0
1	5	Illinois	0	0	0	3,291	0	1,049	0	493	0	5
<b>SIC 3466-- Crowns and closures</b>												
1	3	West Virginia	0	850	0	0	0	0	0	0	0	0
<b>SIC 3589-- Service industry machinery</b>												
1	4	Kentucky	0	0	0	0	0	0	0	0	1,497	0
<b>SIC 3711-- Motor vehicles and car bodies</b>												
1	7	Missouri	0	0	0	0	0	0	0	27,000	0	0
<b>SIC 3721-- Aircraft</b>												
1	4	Alabama	0	1,622	0	2,020	0	0	0	0	0	0
<b>SIC 3722-- Boat building and repairing</b>												
1	6	Arkansas	0	0	0	0	0	4,342	0	0	0	0
<b>SIC 5169-- Chemicals and allied products, nec</b>												



			1999		2000		2001		2002		2003	
Number of Facilities	EPA Region	State	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle	Onsite Recycle	Offsite Recycle
1	6	Texas	0	0	0	0	0	0	100	0	0	0
<b>SIC 5171-- Petroleum bulk stations and terminals</b>												
1	1	Connecticut	0	0	0	0	0	0	0	1,400	0	2,953
1	2	New Jersey	0	0	0	0	0	2,697	0	0	0	0
1	2	New York	0	0	0	953	0	0	0	0	0	0
10	3	Pennsylvania	0	4,196	0	207	0	28,279	0	51,272	0	54
2	3	Virginia	0	647	0	2,139	48	3	0	180	0	160
1	5	Ohio	0	0	0	8	0	50	0	117	0	0
1	5	Michigan	0	0	0	1,253	0	0	0	0	0	0
1	6	Texas	0	0	0	0	0	0	4	0	350	0
1	8	Wyoming	0	19,241	0	0	0	0	0	0	0	0
<b>SIC 97111-- National Security</b>												
1	2	New Jersey					1,200	3,000				